

REMARKS/ARGUMENTS

Favorable reconsideration of this application, in view of the present amendments and in light of the following discussion, is respectfully requested.

Claims 22, 24, 26-34, and 36-47 are pending in the present application. Claim 22 is amended. Support for the amendment to Claim 22 is self-evident. Thus, no new matter is added.

The outstanding Office Action rejected Claims 22, 24, 29-34, 36-42, and 45-47 under 35 U.S.C. § 103(a) as unpatentable over Ress, Jr. et al. (U.S. Patent No. 6,190,133, hereinafter “Ress”) in view of Sagel et al. (U.S. Patent No. 6,773,817, hereinafter “Sagel”); and rejected Claims 26-28 and 43-44 under 35 U.S.C. § 103(a) as unpatentable over Ress in view of Sagel and further in view of Schilling (U.S. Patent No. 5,490,764) or Bedford (GB 2242848).

At the outset, Applicants note with appreciation the courtesy of a personal interview granted to Applicants’ representative by Examiner Jason Savage. In combination with the Interview Summary provided by Examiner Savage, the substance of the personal interview is substantially summarized below in accordance with MPEP § 713.04.

Applicants respectfully traverse the rejection of Claims 22, 24, 29-34, 36-42, and 45-47 under 35 U.S.C. § 103(a) as unpatentable over Ress in view of Sagel.

Amended independent Claim 22 recites a blade that includes a core and a casing and independent Claim 38 recites a method of manufacturing a blade that includes a core and a casing. The core includes a first material that includes at least a metal matrix and the casing includes a second material that includes at least a metal matrix. The metal matrices of the first and second materials are aluminum based. The core and casing include a metallurgical bond between each other that results from compressing the core and the casing. The blade is manufactured by a compression step followed by a forging step.

Turning now to the cited art, Ress describes an airfoil (22) with a gamma titanium aluminide alloy core (23) and a cast metallic structure formed of a titanium alloy (22a). As discussed in the personal interview, Ress fails to disclose or suggest a method of manufacturing a blade that includes compressing a core and a casing to make a semi-finished product containing the core and the casing and forging the semi-finished product to obtain a blank with a quasi-final shape of the blade. Instead, as discussed in the personal interview, Ress describes producing an airfoil (22) by positioning the core (23) in an airfoil shaped cavity (102) within a mold (100), pouring molten metal into the airfoil shaped cavity (102) to form a cast metallic structure coupled to and substantially surrounding the core, and subjecting the single-cast metallic airfoil to a hot isostatic pressing (HIP) operation.<sup>1</sup>

In addition, the outstanding Office Action acknowledges that Ress fails to describe an embodiment where the core and casing are aluminum based.<sup>2</sup> Instead, the outstanding Office Action relies on Sagel for the above-noted feature. As discussed in the personal interview, Sagel describes a wear-resistant coating for a blade produced by powder metallurgy from Ti-Al. In other words, Sagel fails to disclose or suggest a blade with a core that includes a first material that includes a metal matrix and a casing that includes a second material that includes at least a metal matrix and that the metal matrices of the first and second materials are aluminum based. Moreover, as discussed in the personal interview, it would not be obvious for a person of ordinary skill in the art to combine the teachings of Ress, which is directed to improving stiffness and high cycle fatigue capability of gas turbine engine airfoils, with Sagel, which is directed towards a wear-resistant coating for an airfoil, to arrive at the present invention, which is directed to a blade with improved mechanical properties.

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<sup>1</sup> See Ress at column 5, line 52 to column 6, line 16.

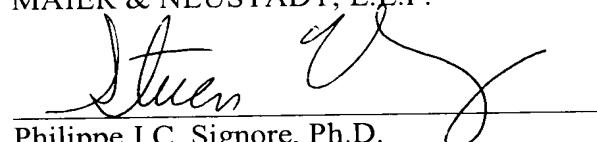
<sup>2</sup> See outstanding Office Action at page 3.

Accordingly, no reasonable combination of Ress and Sagel would include all of the features recited in independent Claims 22 and 38, or claims depending therefrom. The other cited references, such as Schilling and Bedford, were applied for other features recited in the dependent claims and do not provide any additional support for concluding that independent Claims 22 and 38 would have been obvious. Therefore, Applicants respectfully request the rejection of Claims 22, 24, 26-34, and 36-47 under 35 U.S.C. § 103(a) be withdrawn.

Consequently, in light of the above discussion and in view of the present amendment, the present application is believed to be in condition for allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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